

In re Patent Application of
RAYNOR
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In the Specification:

Please replace paragraph [0005] on page 2 with the following rewritten paragraph:

~~According to the present invention there is provided a photodiode as claimed in the attached claims.~~

In view of the foregoing background, an object of the present invention is to provide an image sensing structure that improves matching between pixels.

This and other objects, advantages and features in accordance with the present invention are provided by an image sensing structure comprising at least one photodiode comprising a layer of a first conductivity type, and a well of a second conductivity type in the layer. The well defines a collection node for the photodiode. An isolation trench at least partially bounds an upper portion of the well. Alternatively, the isolation trench may completely bound the upper portion of the well.

The isolation trench may comprise a shallow trench isolation (STI). The well may comprise an N-well, and the layer may comprise a P-well or a P-type epitaxial layer. An n-p junction may be formed at an interface between the isolation trench and the well. A width of the photodiode may be less than or equal to 10 micrometers.

Another aspect of the present invention is directed to a method for making an image sensing structure comprising forming at least one photodiode comprising forming a layer of a first conductivity type, and forming an isolation trench in the layer. A well of a second conductivity type is formed in the layer. The well may define a collection node and may be at least partially bounded by the isolation trench.